

GRADES

TYPE	NOMINAL PORE DIAMETER	COMMON FORM mm	BULK DENSITY Kg/m ³	HEAT OF ADSORPTION BTU/lb H ₂ O (Kcal/Kg H ₂ O)	EQUILIBRIUM H ₂ O CAPACITY WT- %	ADSORPTION	MOISTURE CONTENT (WHEN PACKED) WT-%	MOLECULES EXCLUDED	MOLECULES ADSORBED
3A	3 Å	POWDER 1.7~ 2.5 Beads 3.0 ~ 5.0 Beads 1.6 Pellets 3.2 Pellets	≥ 430 ≥ 720 ≥ 700 ≥ 660 ≥ 660	1800 (1,000)	≥ 22 ≥ 21 ≥ 21 ≥ 21 ≥ 21	Ethylene adsorption wt% ≤ 3.0	≤ 2.0 ≤ 2.0 ≤ 2.0 ≤ 2.0 ≤ 2.0	Molecules with an effective diameter >3 angstroms (ethane)	Molecules with an effective diameter <3 angstroms including H ₂ O and NH ₃
4A	4 Å	POWDER 1.7~ 2.5 Beads 3.0 ~ 5.0 Beads 1.6 Pellets 3.2 Pellets	≥ 430 ≥ 720 ≥ 700 ≥ 660 ≥ 660	1800 (1,000)	≥ 23 ≥ 22 ≥ 22 ≥ 22 ≥ 22	Methanol adsorption wt% ≥ 15	≤ 2.0 ≤ 2.0 ≤ 2.0 ≤ 2.0 ≤ 2.0	Molecules with an effective diameter >4 angstroms (propane)	Molecules with an effective diameter <4 angstroms including ethanol, H ₂ S, CO ₂ , SO ₂ , C ₂ H ₄ , C ₂ H ₆ and C ₃ H ₆
5A	5 Å	POWDER 1.7~ 2.5 Beads 3.0 ~ 5.0 Beads 1.6 Pellets 3.2 Pellets	≥ 330 ≥ 720 ≥ 700 ≥ 660 ≥ 660	1800 (1,000)	≥ 26 ≥ 22.5 ≥ 22.5 ≥ 22.5 ≥ 22.5	Methanol adsorption mg/g ≤ 120	≤ 2.0 ≤ 2.0 ≤ 2.0 ≤ 2.0 ≤ 2.0	Molecules with an effective diameter >5 angstroms (iso compounds and all 4-carbon rings)	Molecules with an effective diameter <5 angstroms including n-C ₄ H ₉ OH, n-C ₄ H ₁₀ , C ₃ H ₈ to C ₂₂ H ₄₆ , R-12
13X	10 Å	1.7~ 2.5 Beads 3.0 ~ 5.0 Beads 1.6 Pellets 3.2 Pellets	≥ 700 ≥ 680 ≥ 650 ≥ 650	1800 (1,000)	≥ 27 ≥ 27 ≥ 27 ≥ 27	CO ₂ adsorption wt% ≥ 18	≤ 2.0 ≤ 2.0 ≤ 2.0 ≤ 2.0	Molecules with an effective diameter >8 angstroms (C ₄ F ₉) ₃ N	Molecules with an effective diameter <8 angstroms including C ₆ H ₆ , C ₇ H ₈

APPLICATIONS

INDUSTRIES	SERVICES	GRADES
PETROLEUM INDUSTRIES	Dehydration of Hydrocarbon Gas or Liquid (No Olefins Present)	MS 4A
	Dehydration of Hydrocarbon Gas or Liquid (With Olefins Present)	MS 3A
	Benzene drying Toluene drying Xylene drying Cyclohexane drying Naphtha drying Feedstock drying Benzene drying Propane drying Butane drying Pentane drying Hexane drying LPG drying Kerosene drying Jet fuel drying Gas oil drying Solvent drying B.T.X. drying Hydrogen make-up drying	MS 4A
	Naphtha sweetening	MS 13X
	Hydrogen recycle treatment	MS 4A
	Normal and isoparaffins separation	MS 13X
	Feedstock sweetening	MS 13X
	Hydrogen purification	MS 5A
	Ethylene drying	MS 3A
	Propane sweetening	MS 5A MS 13X
	Butane sweetening	MS 5A MS 13X

INDUSTRIES	SERVICES	GRADES
	Pentane sweetening	MS 13X
	Hexane sweetening	MS 4A
	LPG sweetening	MS 5A MS 13X
PETROCHEMICAL INDUSTRIES	Cracked gas drying Cracked liquid drying C2 cut drying C3 cut drying Hydrogen drying Propylene drying Butadiene drying Other olefins drying Other diolefins drying Propylene drying Feedstock drying Feedstock purification	MS 3A
CHEMICAL INDUSTRIES	CO2 removal	MS 4A MS 5A MS 13X
	Paraffins drying, Benzene drying	MS 4A
	Solvent drying	MS 3A MS 4A MS 5A
	Alcohol drying	MS 3A
	Chlorofluorohydrocarbons purification, CO and N2 removal from H2 rich streams in PSA, Hydrogen recovery, Hydrogen purification.	MS 5A
	Solvent purification	MS 5A MS 13X

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INDUSTRIES	SERVICES	GRADES
	Chlorofluorohydrocarbons drying, Purge gas treatment	MS 4A
	Air separation plant	MS 13X
	Synthesis gas drying and purification, Process gas treatment	MS 4A MS 13X
	O2 & N2 production from air by PSA	MS 5A MS 13X
NATURAL GAS INDUSTRIES	Natural gas drying	MS 3A MS 4A MS 5A
	LPG drying	MS 3A MS 4A
	Propane drying Butane drying Condensate drying	MS 4A
	LNG drying	MS 4A MS 5A
	Natural gas sweetening Condensate sweetening LPG sweetening Propane sweetening Butane sweetening LNG sweetening	MS 4A MS 5A
	CO2 removal from natural gas	MS 4A MS 5A MS 13X
	H2S removal from natural gas	MS 5A MS 13X
GLASS INDUSTRIES	Removal of trapped moisture inside the dual-pane window	MS 3A MS 5A
	Vapour Removal from sealing materials, paint and cleaning solvents related with window manufacture.	MS 4A

INDUSTRIES	SERVICES	GRADES
SOLVENT REC. UNITS/PLANTS	Chlorofluorohydrocarbons purification	MS 13X
	Solvent purification	MS 5A MS 13X
REFRIGERATION & AIR CONDITIONING	Drying refrigerants in air conditioners, iceboxes and refrigerators in vehicles/transport (station wagons, trains etc) home refrigerators, freezers, residential A/C, heat pumps and commercial refrigerants to prevent freeze-up and corrosion.	MS 3A
PACKAGING & SHIPPING INDUSTRIES	Air Drying	MS 4A
	Dehydration for instrument air	MS 4A
	Dehydration of room air	MS 4A
	Plastic Pellet/Resin Drying	MS 4A
	Packaging of drugs, electronic components, edibles and perishable chemicals etc.	MS 4A
MEDICAL APPLICATIONS	Adsorption of nitrogen from compressed air (by utilising pressure or vacuum swing system).	MS 4A
LABORATORIES	Benzene drying	MS 4A
	Paraffins drying	MS 4A